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THE BRYOLOGIST

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LICHEN NOTES No. 14.

Two New Cetraria Forms and Three New Combinations.

G. K. MERRILL.

1. **Cetraria Oakesiana** var. **spinulosa** Merrill, var. nov.

Thallus moderately spreading, sub-decumbent but the fertile lobes commonly ascendent, greenish or glaucous, cartilagineous, often rigid laciniate-lobate, the lobes variable in length, rather plane, borders sinuous, undulate, sometimes crisped; above slightly uneven or rugulose, sub-shining marginally beset with scattered or abundant very short or sometimes moderately elongated dentate spinules, or some of the lobes sorediate in the manner of the species; within white; below whitish-fuscescent or brownish, sub-shining or opaque, here and there rugulose, with coarse fuscous rhizinae conspicuously developed at the point of contact with the substratum. Apothecia rather infra-marginal, concave at first with a rather thickened rugulose incurved margin, finally more or less explanate, the margin continuing as in the juvenile states or even with the disk, epithecium chestnut, shining, the back of the receptacle rugulose. Spores simple, globose or sub ellipsoid, in eights, 5–6μ, spermatia cyclindrical, straight, very slightly thickened at one end, spermogones situated in the swollen tips of the spinules.

On twigs of *Kalmia latifolia* and *Picea rubra*, "Cranberry Glades," Pocahontas County, W. Virginia. J. L. Sheldon, Aug. 5 and 7, 1909. Plate II. Fig. 2.

The present is unmistakably near to *C. Laureri* Kremplh. Flora (1851) p. 673. *Platysma complicatum* Nyl. Syn. (1860) p. 303. The apothecia are affixed at the tips of the plane linear lobes in the same manner, and the margins of the lobes are likewise spinulose. The description of *C. Oakesiana* in Tuckerman's 1848 Synopsis p. 17, mentions that the species may have "black-ciliate (or more commonly pulverulent)" margin. Whether this means that the author was acquainted with the form here described is not known. I have examined no specimens of *C. Oakesiana* provided with cilia, and the v. *spinulosa* is dentate-spinulose, not ciliate. In the 1882 Synopsis Tuckerman omits mention of ciliate conditions of *C. Oakesiana*, and he disclaims having found spermatia.

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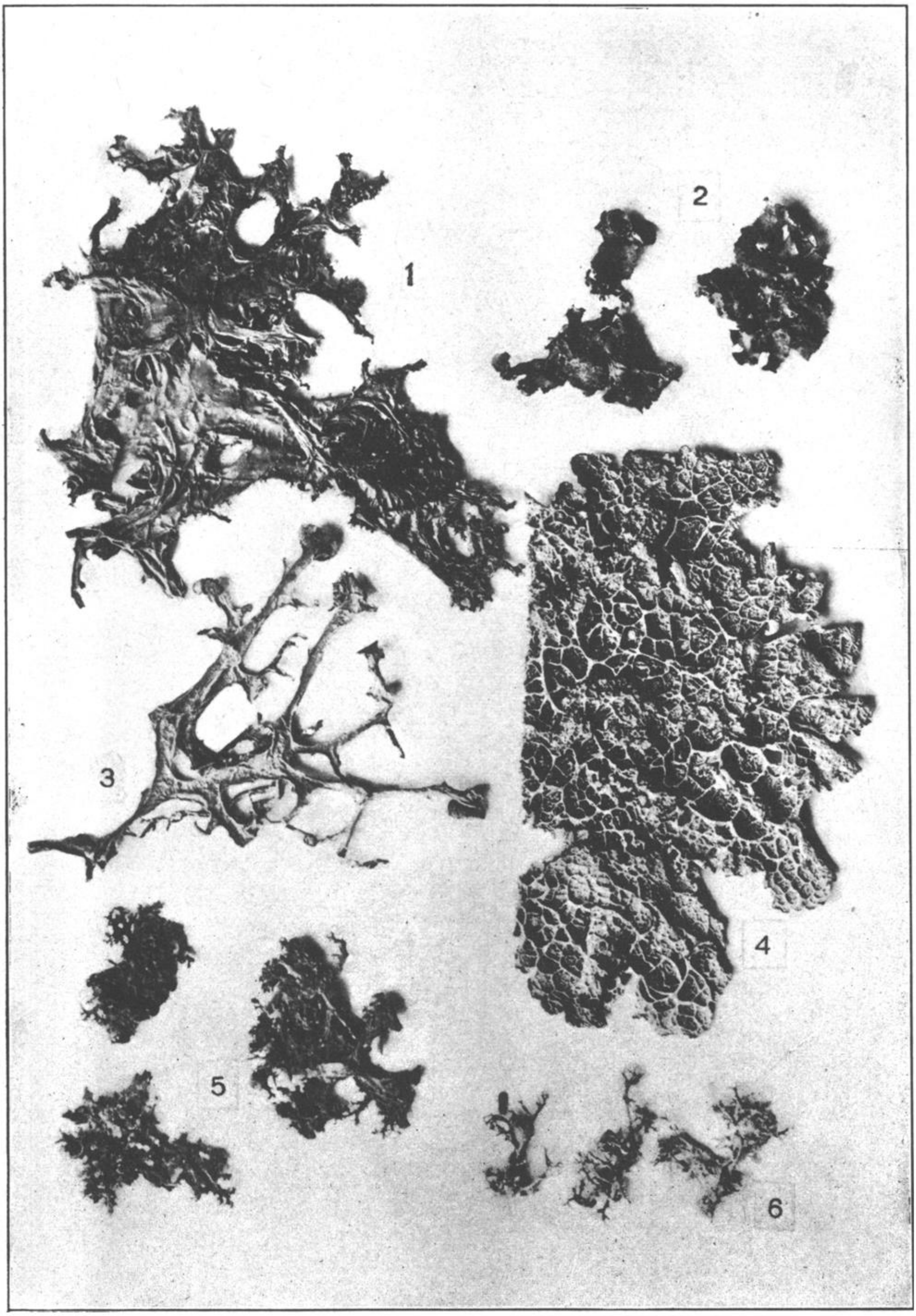

Plate II. Cetraria forms.

2. **Cetraria hiascens** (Fr.) Th. Fr. Lich. Scand. p. 98, var. **macrophylla** Merrill, var. nov.

Thallus growing in tufts, erect or sub-decumbent, pallid-fuscescent brown or even nigricant at the tips but paler basally, rigid but brittle, the lobes variable in width, attaining to a maximum of 16 mm. and a height of 7 cent. the margins dividing into relatively short irregularly outlined lacinulae, both major and minor axils rounded, lobes commonly plane but variously contorted, only the tips canaliculate; the superior surface smooth, irregularly lacunose, the lacunae shallow, or here and there ribbed, scarcely differing below except in remaining pale with scattered white soredia, cortex continuous, sub-shining, the borders of the lobes laciniolate-spinulose. Apothecia not seen.

On the earth with mosses and other lichen species. St. Paul's Is. Behring Sea, J. M. Macoun, June, 1897. Plate II. Fig. 1.

A remarkable form analogous to the v. *robusta* Ach. of *C. Islandica.* Only the possession by the writer of an exceptionally informative series of *C. hiascens* serves to ally the present with the attenuated and multifid examples of the White Mountains of New England. The colder regions of the earth seem to be the natural homes of the explanate forms of *Islandica* stock, for there is marked tendency in specimens of *C. hiascens* from Anticosti Island and Hudson Bay toward lateral expansion. *C. hiascens* from the White Mountains affords two rather distinct forms, one of which, a rather carious and strongly albo-sorediate condition was saluted by one American lichenist as *Cladonia degenerans.* The second of these, commonly very slender, less sorediate and usually espinulose, has been called *Cladonia furcata spadicea*, *Evernia furfuracea* and by other appellations. The close affinity that the younger Fries reckons for *C. hiascens* with *C. Islandica* is in my opinion rather a parallelism, no more to be regarded than is the marked similarity of certain conditions of *C. Islandica* with variant states of *C. cucullata.* The caespitose densely-compacted habit of the more slender states of *C. hiascens* is entirely absent in the var. *macrophylla.*

3. **Cetraria lacunosa** Ach. forma **cavernosa** (Menzies) Merrill, comb. nov.

Thallus cartilaginous, rigid in old specimens, lobes less ascendent than in the species, reticulate-lacunose-cellulose, the septum dividing the lacunae conspicuous and very thin; the superior surface whitish, whitish-cinereous or glaucescent, opaque; beneath whitish at the circumference, centrally brown or blackish, or the whole surface variegated, commonly opaque, but sometimes shining, when as it now and then happens that the plant is corticated. Apothecia as in the species but not so commonly perforate.

On limbs of alders, Cathlamet, Wash., A. S. Foster, no. 501; and Comox, Vancouver Is. Macoun's Canadian Lichens, no. 25. Plate II. Fig. 4.

The f. *cavernosa* differs chiefly from the species in color and in the depth attained by the cellular lacunae. While the species is also found on the west coast, I have examined no gradal conditions between it and the forma. Mr. A. S. Foster to whom I am indebted for very beautiful specimens of the latter informs me that it is of rather uncommon occurrence, although when discovered there are usually several plants found together.

There are certain membranaceous round or irregularly-round lobed conditions of *C. lacunosa* occasionally found that approach so nearly to variant examples of *C. glauca* as to be often confounded with that species. In the first mentioned the commonly brown and shining under surface is found to be faintly *rugose-pustulate.* The *C. glauca* form likewise brown and shining is differenced by its *rugulose-reticulate* inferior surface. The upper surface in both forms is distinctly lacunose-reticulate. In freshly gathered specimens it is easy to discriminate between the two for the *C. glauca* form has the distinct green coloration characteristic of the species, but in herbarium specimens where the color has changed, only attention to the characters below may serve to separate.

4. **Cetraria stenophylla** (Tuck.) Merrill, comb. nov.

C. lacunosa b. *stenophylla* Tuck. Synopsis p. 35.

That this plant has any nearer relationship with *C. lacunosa* than *C. glauca* is open to question. All of the many gradal conditions of the species that I have examined afford evidence rather of an affinity to the latter through its var. b. *stenophylla* Tuck. Agreeing with *C. lacunosa* in coloration and in tendency to fertility, *C. stenophylla* is like the narrowed *C. glauca* form in mode of ramification and the more important particular of habit. No difficulty is experienced in tracing the origination of *C. glauca stenophylla*, for narrowed (stenophylline) states of the laciniae are sometimes observed as accompaniments of the typical broader ones, in a single individual. In no instance however have I observed any tendency of undoubted *C. lacunosa* to divide into narrowed linear lobes in the manner of the present. Transition states are not wanting between *C. stenophylla* and the *C. glauca* form, indeed it is at times difficult to say whether a specimen be one or the other. The principal points of difference between the two may be summarized as follows. The margins of the laciniae in *C. stenophylla* are commonly continuous and rather smooth, while in the *C. glauca* form they are broken, dissected and at times coralloid. *C. steno-*

phylla is often found with apothecia but the other is seldom seen fertile. The superior surface of both plants is more or less reticulated, opaque and sub-shining. Below *C. glauca stenophylla* is commonly corticated brown and shining, while *stenophylla* is usually white, decorticate and opaque, or sub-shining. These characters are very inconstant however. Plate II. Fig. 3.

5. Cetraria Californica Tuck. Suppl. 1859. p. 203.

Plate II. Fig. 5.

The discrepancy between the original description of this plant and the published examples, long ago attracted my notice. Tuckerman's description converted into English reads: Thallus caespitose, cartilagineous, lacunose-subcanaliculate, opaque, greenish-fuscescent, irregularly sub-dichotomously branched, the branches patent, fertile branches thickened above; apothecia terminal, appendiculate, margins dentate-fimbriate at length convex, black. The author further remarks of its habit; "fronds in small roundish masses, many branches diverging from a single base, with the aspect of a small slender state of *Ramalina calicaris* b. than of the erect *Cetraria* to which, and in particular *C. trista* and *C. aculeata*, it is indeed, if I mistake not, nearest allied." Tuckerman's diagnosis of the form in his Synopsis p. 29, differs only in a slight amplification. He states that the plant is 'fruticulose, sub-fistulous, compressed-terete, at length deeply canaliculate lacunose "—" the disk dark green, becomimg black aud excluding the toothed margin." The term compressed-terete is scarcely applicable to any condition shown in my copies of the following exsiccati: Kryptogamae exsiccati (Zahlbruckner) no. 1047; Lichenes Boreali Am. (Cummings) no. 142; Decades No. Am. Lichens (Cummings) no. 212; and two copies of no. 192 of Dr. Hasse's distribution. There is furthermore a marked divergence in color and mode of branching in the examples cited from Tuckerman's description. In 1908 Mr. A. S. Foster favored me with a copious collection of a plant that after considerable study I pronounced to be *Cetraria Californica* of Tuckerman's Synopsis. The material answered in every way to the description except that the margins of the apothecia were almost uniformly smooth rather than dentate-fimbriate or toothed. Examination of the material made more emphatic the differences apparent between specimens of the exsiocati cited and Tuckerman's description. A recent lot of lichens from Mr. Foster contained a peculiar dark almost black Cetraria-like form reminding one of *C. sepincola* that I eventually considered equivalent to that form of C. *Californica* represented in the exsiccati mentioned.. The specimens were sufficiently variant from the published plants however to reawaken interest in the whole series, and to engender some doubt of the correctness of my reference of Mr. Foster's first material to *C. Californica.* In order to determine if one or both of the forms here discussed, or if only one, which one might rightfully be called *Cetraria Californica* Tuck. typical specimens of each were submitted to Dr. W. G. Farlow, of Harvard University, for comparison with Tuckerman's original material. In response, Dr. Farlow writes: "the *Cetraria Californica* of Miss Cummings" (and this includes the Hasse and Zahlbruckner specimens) is what is called in Herb. Tuckerman var. *sepincola.* That on *Pinus contorta*" (the terete-compressed form of Mr. Foster's first collection) "is really *C. Californica* of Herb. Tuckerman," and I will add of his description. During my early examination of Mr. Foster's first collection of *C. Californica* vera according to Dr. Farlow's letter, the striking resemblance of the plants to *Alectoria Oregana* Tuck. furnished a matter for consideration. This similarity is noted in the often costate-channelled main stems of both and the similar manner in which the apothecia are borne. The apothecia of the form Tuckerman designates as his species as examined in numerous specimens are typically *lateral* and affixed in much the manner of *Ramalina* (*Alectoria*) *gracilis* Nyl. and appendiculate when only one occurs on a stem, or the uppermost when more than one is found. So dubious seemed any reference of the form to *Cetraria* as it has been studied of late, that an effort was made to allocate it with some of the published *Alectoria* species. *Alectoria cetrariza* Nyl. Lich. Freti Behringii p. 76, collected in Oregon on *Pinus contorta* seemed from its description to agree very well with our plant, and as the cotype of the species presumably reposed in an American herbarium, confirmation of the suspected equivalency appeared to be within reach. Dr. J. W. Eckfeldt from whose hand Nylander received *Alectoria cetrariza* kindly compared specimens of *Cetraria Californica* vera with his cotype, and pronounced them alike. Arguing that Nylander's view of the generic affinity of the species is correct and that is my belief, a new combination becomes necessary for its designation. It is proposed to salute the species as **Alectoria Californica** (Tuck. Merrill comb. nov. Plate II. Fig. 6.

With reference to what Tuckerman designated in herbarium as the var. *sepincola* of *Cetraria Californica*, there is no reason to believe that it is in any way related with *Alectoria Californica* as here constituted, either by descent or affinity, and certainly not anatomically. The thallus of the former is typically foliaceous, dorsiventral in structure, and the apothecia are affixed to the surface or near the margin of the lobes and provided with a dentatc excipular margin. In *Alectoria Californica* the thallus is cylindrical, radial in structure, the apothecia lateral with a commonly entire and smooth margin. In the view here taken of the species *Cetraria Californica* Tuck. is as yet undescribed and only represented in any mode of publication by such examples as have been issued by Miss Cummings and Dr. Zahlbruckner. The sub-nomen *sepincola* may well be dropped.

Rockland, Maine.

A PLEA FOR MORE AND BETTER LOCAL WORK.

ELIZABETH G. BRITTON.

Read by title at the meeting of the Sullivant Moss Society, Boston, Dec. 30, 1909.

This is not meant to disparage any of the work on mosses that has been done in America or that is now being done by various students in different states; but is rather the natural desire of one who day after day, and year after year, is shut up in the house with the mosses, after they are torn from their natural surroundings, all breath of the woodlands gone, and many times all records as to seasons, habitat, date, place, conditions, etc. Sometimes even the name of the collector gone as well. It is from nearly thirty years of study and experience that I say, that no group of flowering plants will better repay ecological and biological study than the mosses.

The most common species are often the ones least understood. or if they have been understood. their records are lost, and only a list of synonyms, sometimes a page in length (See Paris Index p. 339–340, vol. 1, second edition,) as in *Ceratodon purpureus*, remains to show the struggles of systematists to account for its variations and the imperfections of our text-books in description. You know what Braithwaite says about this species?

"The polymorphous character of this plant may be assumed from its lengthy synonymy, and so endless are the forms that we cannot even define stable varieties. We would advise all commencing bryologists to study every part of this moss well, as its structure once familiarized to the eye will save much after trouble, and the beautiful peristome must attract every microscopist."

Ditrichum tortile (Schrad.) Boeck. is another puzzle (See Paris Index 2: 98) and even at the present time American students are not agreed as to whether we have one species or four, in our collections, bearing this name.